

## ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental  
2425 New Holland Pike  
Lancaster, PA 17601

Prepared for:

Stantec  
1060 Andrew Drive  
Suite 140  
West Chester PA 19380

February 19, 2016

**Project: Marcus Hook RCRA**Submittal Date: 02/05/2016  
Group Number: 1629450  
PO Number: MARCUS HOOK  
State of Sample Origin: PA

<u>Client Sample Description</u>	<u>Lancaster Labs (LL) #</u>
MW-86 Grab Groundwater	8233404
MW-17 Grab Groundwater	8233405
MW-28 Grab Groundwater	8233406
MW-30 Grab Groundwater	8233407
MW-40 Grab Groundwater	8233408
TB-20160204 Water	8233409

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/> .

ELECTRONIC      Sunoco c/o Stantec  
COPY TO

Attn: Jennifer Menges

Respectfully Submitted,

A handwritten signature in dark ink, appearing to read "Amek Carter". The signature is fluid and cursive, with the first name "Amek" and the last name "Carter" clearly distinguishable.

Amek Carter  
Specialist

(717) 556-7252

Sample Description: MW-86 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233404  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 10:20 by CD

Stantec  
1060 Andrew Drive  
Suite 140  
West Chester PA 19380

Submitted: 02/05/2016 15:33

Reported: 02/19/2016 10:59

MHI86

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
<b>GC/MS Volatiles EPA 624</b>					
10371	Benzene	71-43-2	7	0.9	1
10371	Ethylbenzene	100-41-4	2 J	0.8	1
10371	Toluene	108-88-3	2 J	0.8	1
10371	Xylene (total)	1330-20-7	3 J	0.9	1
<b>GC/MS Semivolatiles EPA 625</b>					
10334	Acenaphthene	83-32-9	N.D.	0.3	1
10334	Anthracene	120-12-7	N.D.	0.2	1
10334	Benzo(a)anthracene	56-55-3	N.D.	0.2	1
10334	Benzo(a)pyrene	50-32-8	N.D.	0.3	1
10334	Di-n-butylphthalate	84-74-2	N.D.	0.5	1
10334	Chrysene	218-01-9	N.D.	0.2	1
10334	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	1	1
10334	Fluorene	86-73-7	N.D.	0.3	1
10334	Naphthalene	91-20-3	N.D.	0.2	1
10334	Phenanthrene	85-01-8	N.D.	0.2	1
10334	Phenol	108-95-2	N.D.	0.4	1
<b>Metals SW-846 6010B</b>					
07051	Chromium	7440-47-3	N.D.	2.0	1
07055	Lead	7439-92-1	N.D.	5.1	1
<b>Wet Chemistry EPA 335.4</b>					
00237	Total Cyanide (water)	57-12-5	N.D.	5.0	1
<b>EPA 1664A</b>					
00612	SGT-HEM (TPH)	n.a.	1,900 J	1,400	1

## General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10371	BTEX by 624	EPA 624	1	U160382AA	02/08/2016 05:22	Alexander M Ametrano	1
10334	SVOCs 625	EPA 625	1	16041WAA625	02/11/2016 13:20	Linda M Hartenstine	1
08108	625 Water Extraction	EPA 625	1	16041WAA625	02/10/2016 21:45	Karen L Beyer	1
07051	Chromium	SW-846 6010B	1	160401848001	02/11/2016 15:54	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	160401848001	02/10/2016 20:13	Suzanne M Will	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	160401848001	02/10/2016 10:25	Christopher M Klumpp	1

Sample Description: MW-86 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233404  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 10:20 by CD

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MHI86

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00237	Total Cyanide (water)	EPA 335.4	1	16049102101A	02/18/2016 12:49	Joseph E McKenzie	1
00492	Cyanide Water Distillation	EPA 335.4	1	16049102101A	02/18/2016 09:45	Nancy J Shoop	1
00612	SGT-HEM (TPH)	EPA 1664A	1	16042807801A	02/11/2016 17:59	Michelle L Lalli	1

Sample Description: MW-17 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233405  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

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MHI17

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
<b>GC/MS Volatiles EPA 624</b>					
10371	Benzene	71-43-2	N.D.	0.9	1
10371	Ethylbenzene	100-41-4	N.D.	0.8	1
10371	Toluene	108-88-3	N.D.	0.8	1
10371	Xylene (total)	1330-20-7	N.D.	0.9	1
<b>GC/MS Semivolatiles EPA 625</b>					
10334	Acenaphthene	83-32-9	N.D.	0.3	1
10334	Anthracene	120-12-7	N.D.	0.2	1
10334	Benzo(a)anthracene	56-55-3	N.D.	0.2	1
10334	Benzo(a)pyrene	50-32-8	N.D.	0.3	1
10334	Di-n-butylphthalate	84-74-2	N.D.	0.5	1
10334	Chrysene	218-01-9	N.D.	0.2	1
10334	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	0.9	1
10334	Fluorene	86-73-7	N.D.	0.3	1
10334	Naphthalene	91-20-3	N.D.	0.2	1
10334	Phenanthrene	85-01-8	N.D.	0.2	1
10334	Phenol	108-95-2	N.D.	0.4	1
<b>Metals SW-846 6010B</b>					
07051	Chromium	7440-47-3	13.0 J	2.0	1
07055	Lead	7439-92-1	31.5	5.1	1
<b>Wet Chemistry EPA 335.4</b>					
00237	Total Cyanide (water)	57-12-5	N.D.	5.0	1
<b>EPA 1664A</b>					
00612	SGT-HEM (TPH)	n.a.	1,700 J	1,400	1

## General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10371	BTEX by 624	EPA 624	1	U160382AA	02/08/2016 05:46	Alexander M Ametrano	1
10334	SVOCs 625	EPA 625	1	16041WAA625	02/11/2016 13:43	Linda M Hartenstine	1
08108	625 Water Extraction	EPA 625	1	16041WAA625	02/10/2016 21:45	Karen L Beyer	1
07051	Chromium	SW-846 6010B	1	160401848001	02/11/2016 15:57	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	160401848001	02/10/2016 20:17	Suzanne M Will	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	160401848001	02/10/2016 10:25	Christopher M Klumpp	1

Sample Description: MW-17 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233405  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

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## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00237	Total Cyanide (water)	EPA 335.4	1	16049102101A	02/18/2016 12:53	Joseph E McKenzie	1
00492	Cyanide Water Distillation	EPA 335.4	1	16049102101A	02/18/2016 09:45	Nancy J Shoop	1
00612	SGT-HEM (TPH)	EPA 1664A	1	16042807801A	02/11/2016 17:59	Michelle L Lalli	1

Sample Description: MW-28 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233406  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

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MHI28

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
<b>GC/MS Volatiles EPA 624</b>					
10371	Benzene	71-43-2	N.D.	0.9	1
10371	Ethylbenzene	100-41-4	N.D.	0.8	1
10371	Toluene	108-88-3	N.D.	0.8	1
10371	Xylene (total)	1330-20-7	N.D.	0.9	1
<b>GC/MS Semivolatiles EPA 625</b>					
10334	Acenaphthene	83-32-9	N.D.	0.3	1
10334	Anthracene	120-12-7	N.D.	0.2	1
10334	Benzo(a)anthracene	56-55-3	N.D.	0.2	1
10334	Benzo(a)pyrene	50-32-8	N.D.	0.3	1
10334	Di-n-butylphthalate	84-74-2	N.D.	0.5	1
10334	Chrysene	218-01-9	N.D.	0.2	1
10334	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	0.9	1
10334	Fluorene	86-73-7	N.D.	0.3	1
10334	Naphthalene	91-20-3	N.D.	0.2	1
10334	Phenanthrene	85-01-8	N.D.	0.2	1
10334	Phenol	108-95-2	N.D.	0.4	1
<b>Metals SW-846 6010B</b>					
07051	Chromium	7440-47-3	2.7 J	2.0	1
07055	Lead	7439-92-1	N.D.	5.1	1
<b>Wet Chemistry EPA 335.4</b>					
00237	Total Cyanide (water)	57-12-5	N.D.	5.0	1
<b>EPA 1664A</b>					
00612	SGT-HEM (TPH)	n.a.	N.D.	1,400	1

## General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10371	BTEX by 624	EPA 624	1	U160382AA	02/08/2016 06:09	Alexander M Ametrano	1
10334	SVOCs 625	EPA 625	1	16041WAA625	02/11/2016 14:07	Linda M Hartenstine	1
08108	625 Water Extraction	EPA 625	1	16041WAA625	02/10/2016 21:45	Karen L Beyer	1
07051	Chromium	SW-846 6010B	1	160401848001	02/11/2016 16:01	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	160401848001	02/10/2016 20:20	Suzanne M Will	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	160401848001	02/10/2016 10:25	Christopher M Klumpp	1

Sample Description: MW-28 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233406  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 14:15 by CD

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MHI28

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00237	Total Cyanide (water)	EPA 335.4	1	16049102101A	02/18/2016 12:54	Joseph E McKenzie	1
00492	Cyanide Water Distillation	EPA 335.4	1	16049102101A	02/18/2016 09:45	Nancy J Shoop	1
00612	SGT-HEM (TPH)	EPA 1664A	1	16042807801A	02/11/2016 17:59	Michelle L Lalli	1

Sample Description: MW-30 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233407  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 12:30 by CD

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West Chester PA 19380

Submitted: 02/05/2016 15:33

Reported: 02/19/2016 10:59

MHI30

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
<b>GC/MS Volatiles EPA 624</b>					
10371	Benzene	71-43-2	3 J	0.9	1
10371	Ethylbenzene	100-41-4	N.D.	0.8	1
10371	Toluene	108-88-3	N.D.	0.8	1
10371	Xylene (total)	1330-20-7	N.D.	0.9	1
<b>GC/MS Semivolatiles EPA 625</b>					
10334	Acenaphthene	83-32-9	N.D.	0.3	1
10334	Anthracene	120-12-7	N.D.	0.2	1
10334	Benzo(a)anthracene	56-55-3	N.D.	0.2	1
10334	Benzo(a)pyrene	50-32-8	N.D.	0.3	1
10334	Di-n-butylphthalate	84-74-2	N.D.	0.5	1
10334	Chrysene	218-01-9	N.D.	0.2	1
10334	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	0.9	1
10334	Fluorene	86-73-7	N.D.	0.3	1
10334	Naphthalene	91-20-3	1 J	0.2	1
10334	Phenanthrene	85-01-8	N.D.	0.2	1
10334	Phenol	108-95-2	N.D.	0.4	1
<b>Metals SW-846 6010B</b>					
07051	Chromium	7440-47-3	2.7 J	2.0	1
07055	Lead	7439-92-1	N.D.	5.1	1
<b>Wet Chemistry EPA 335.4</b>					
00237	Total Cyanide (water)	57-12-5	N.D.	5.0	1
<b>EPA 1664A</b>					
00612	SGT-HEM (TPH)	n.a.	2,800 J	1,400	1

## General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10371	BTEX by 624	EPA 624	1	U160382AA	02/08/2016 06:32	Alexander M Ametrano	1
10334	SVOCs 625	EPA 625	1	16041WAA625	02/11/2016 14:30	Linda M Hartenstine	1
08108	625 Water Extraction	EPA 625	1	16041WAA625	02/10/2016 21:45	Karen L Beyer	1
07051	Chromium	SW-846 6010B	1	160401848001	02/11/2016 16:04	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	160401848001	02/10/2016 20:24	Suzanne M Will	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	160401848001	02/10/2016 10:25	Christopher M Klumpp	1

Sample Description: MW-30 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233407  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 12:30 by CD

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Reported: 02/19/2016 10:59

West Chester PA 19380

MHI30

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00237	Total Cyanide (water)	EPA 335.4	1	16049102101A	02/18/2016 12:56	Joseph E McKenzie	1
00492	Cyanide Water Distillation	EPA 335.4	1	16049102101A	02/18/2016 09:45	Nancy J Shoop	1
00612	SGT-HEM (TPH)	EPA 1664A	1	16042807801A	02/11/2016 17:59	Michelle L Lalli	1

Sample Description: MW-40 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233408  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 15:40 by CD

Stantec

1060 Andrew Drive

Submitted: 02/05/2016 15:33

Suite 140

Reported: 02/19/2016 10:59

West Chester PA 19380

MHI40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
<b>GC/MS Volatiles EPA 624</b>					
10371	Benzene	71-43-2	N.D.	0.9	1
10371	Ethylbenzene	100-41-4	N.D.	0.8	1
10371	Toluene	108-88-3	N.D.	0.8	1
10371	Xylene (total)	1330-20-7	N.D.	0.9	1
<b>GC/MS Semivolatiles EPA 625</b>					
10334	Acenaphthene	83-32-9	N.D.	0.3	1
10334	Anthracene	120-12-7	N.D.	0.2	1
10334	Benzo(a)anthracene	56-55-3	N.D.	0.2	1
10334	Benzo(a)pyrene	50-32-8	N.D.	0.3	1
10334	Di-n-butylphthalate	84-74-2	N.D.	0.5	1
10334	Chrysene	218-01-9	N.D.	0.2	1
10334	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	1	1
10334	Fluorene	86-73-7	N.D.	0.3	1
10334	Naphthalene	91-20-3	N.D.	0.2	1
10334	Phenanthrene	85-01-8	0.6 J	0.2	1
10334	Phenol	108-95-2	N.D.	0.4	1
<b>Metals SW-846 6010B</b>					
07051	Chromium	7440-47-3	4.3 J	2.0	1
07055	Lead	7439-92-1	10.8 J	5.1	1
<b>Wet Chemistry EPA 335.4</b>					
00237	Total Cyanide (water)	57-12-5	N.D.	5.0	1
<b>EPA 1664A</b>					
00612	SGT-HEM (TPH)	n.a.	1,400 J	1,400	1

## General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10371	BTEX by 624	EPA 624	1	U160382AA	02/08/2016 06:55	Alexander M Ametrano	1
10334	SVOCs 625	EPA 625	1	16041WAA625	02/11/2016 14:54	Linda M Hartenstine	1
08108	625 Water Extraction	EPA 625	1	16041WAA625	02/10/2016 21:45	Karen L Beyer	1
07051	Chromium	SW-846 6010B	1	160401848001	02/11/2016 16:08	Suzanne M Will	1
07055	Lead	SW-846 6010B	1	160401848001	02/10/2016 20:27	Suzanne M Will	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	160401848001	02/10/2016 10:25	Christopher M Klumpp	1

Sample Description: MW-40 Grab Groundwater  
Sunoco M.H. (RCRA)

LL Sample # WW 8233408  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016 15:40 by CD

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1060 Andrew Drive  
Suite 140  
West Chester PA 19380

Submitted: 02/05/2016 15:33

Reported: 02/19/2016 10:59

MHI40

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00237	Total Cyanide (water)	EPA 335.4	1	16049102101A	02/18/2016 12:57	Joseph E McKenzie	1
00492	Cyanide Water Distillation	EPA 335.4	1	16049102101A	02/18/2016 09:45	Nancy J Shoop	1
00612	SGT-HEM (TPH)	EPA 1664A	1	16042807801A	02/11/2016 17:59	Michelle L Lalli	1

Sample Description: TB-20160204 Water  
Sunoco M.H. (RCRA)

LL Sample # WW 8233409  
LL Group # 1629450  
Account # 16657

Project Name: Marcus Hook RCRA

Collected: 02/04/2016

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Submitted: 02/05/2016 15:33

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Reported: 02/19/2016 10:59

West Chester PA 19380

MHITB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>EPA 624</b>	<b>ug/l</b>	<b>ug/l</b>	
10371	Benzene	71-43-2	N.D.	0.9	1
10371	Ethylbenzene	100-41-4	N.D.	0.8	1
10371	Toluene	108-88-3	N.D.	0.8	1
10371	Xylene (total)	1330-20-7	N.D.	0.9	1

## General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10371	BTEX by 624	EPA 624	1	U160382AA	02/08/2016 04:36	Alexander M Ametrano	1

## Quality Control Summary

Client Name: Stantec  
Reported: 02/19/2016 10:59

Group Number: 1629450

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: U160382AA	Sample number(s): 8233404-8233409	
Benzene	N.D.	0.9
Ethylbenzene	N.D.	0.8
Toluene	N.D.	0.8
Xylene (total)	N.D.	0.9
Batch number: 16041WAA625	Sample number(s): 8233404-8233408	
Acenaphthene	N.D.	0.3
Anthracene	N.D.	0.2
Benzo(a)anthracene	N.D.	0.2
Benzo(a)pyrene	N.D.	0.3
Di-n-butylphthalate	N.D.	0.5
Chrysene	N.D.	0.2
bis(2-Ethylhexyl)phthalate	N.D.	1
Fluorene	N.D.	0.3
Naphthalene	N.D.	0.2
Phenanthrene	N.D.	0.2
Phenol	N.D.	0.4
Batch number: 160401848001	Sample number(s): 8233404-8233408	
Chromium	N.D.	2.0
Lead	N.D.	5.1
Batch number: 16049102101A	Sample number(s): 8233404-8233408	
Total Cyanide (water)	N.D.	5.0
Batch number: 16042807801A	Sample number(s): 8233404-8233408	
SGT-HEM (TPH)	N.D.	1,400

### LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: U160382AA	Sample number(s): 8233404-8233409								
Benzene	20	19.66	20	20.21	98	101	80-120	3	30
Ethylbenzene	20	19.83	20	20.71	99	104	80-120	4	30
Toluene	20	19.14	20	20.22	96	101	80-120	5	30
Xylene (total)	60	57.43	60	60.98	96	102	80-120	6	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16041WAA625	Sample number(s): 8233404-8233408								
Acenaphthene	50	46.12	50	46.37	92	93	71-118	1	30

\*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: Stantec  
Reported: 02/19/2016 10:59

Group Number: 1629450

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Anthracene	50	45.12	50	49.45	90	99	80-114	9	30
Benzo(a)anthracene	50	48.08	50	48.57	96	97	76-117	1	30
Benzo(a)pyrene	50	46.25	50	47.57	93	95	76-112	3	30
Di-n-butylphthalate	50	43.07	50	51.53	86	103	77-116	18	30
Chrysene	50	48.31	50	51.98	97	104	81-118	7	30
bis(2-Ethylhexyl)phthalate	50	47.86	50	51.18	96	102	77-118	7	30
Fluorene	50	49.11	50	48.7	98	97	80-116	1	30
Naphthalene	50	41	50	43.47	82	87	52-115	6	30
Phenanthrene	50	46.25	50	48.35	93	97	78-112	4	30
Phenol	50	19	50	20.98	38	42	14-69	10	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 160401848001	Sample number(s): 8233404-8233408								
Chromium	200	191.94			96		80-120		
Lead	150	141.53			94		80-120		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16049102101A	Sample number(s): 8233404-8233408								
Total Cyanide (water)	200	191.1			96		90-110		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16042807801A	Sample number(s): 8233404-8233408								
SGT-HEM (TPH)	20000	12800	20000	14000	64	70	64-114	9	18

## MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 160401848001	Sample number(s): 8233404-8233408 UNSPK: P233923									
Chromium	2.85	200	164.27	200	186.68	81	92	75-125	13	20
Lead	N.D.	150	118.79	150	129.49	79	86	75-125	9	20
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: 16049102101A	Sample number(s): 8233404-8233408 UNSPK: 8233404									
Total Cyanide (water)	N.D.	200	181.4			91		90-110		
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: 16042807801A	Sample number(s): 8233404-8233408 UNSPK: P229538									
SGT-HEM (TPH)	N.D.	21800	9021.7			41*		64-132		

## Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
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\*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: Stantec  
Reported: 02/19/2016 10:59

Group Number: 1629450

Analysis Name	BKG Conc ug/l	DUP Conc ug/l	DUP RPD	DUP RPD Max
Batch number: 160401848001	Sample number(s): 8233404-8233408 BKG: P233923			
Chromium	2.85	3.20	12 (1)	20
Lead	N.D.	N.D.	0 (1)	20
Batch number: 16049102101A	Sample number(s): 8233404-8233408 BKG: 8233404			
Total Cyanide (water)	N.D.	N.D.	0 (1)	20

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: BTEX by 624  
Batch number: U160382AA

	1,2-Dichloroethane-d4	Fluorobenzene	4-Bromofluorobenzene
8233404	108	93	103
8233405	107	91	99
8233406	110	94	101
8233407	109	92	102
8233408	106	91	109
8233409	107	91	99
Blank	109	94	102
LCS	105	100	105
LCSD	106	99	106
Limits:	78-118	88-107	80-118

Analysis Name: SVOCs 625  
Batch number: 16041WAA625

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol
8233404	89	91	93	42	63	90
8233405	88	86	108	34	53	85
8233406	83	82	85	42	65	93
8233407	95	91	90	42	67	94
8233408	90	90	91	40	62	82
Blank	95	82	85	40	62	89
LCS	81	96	89	37	62	94
LCSD	87	99	100	40	63	96
Limits:	60-119	62-116	55-124	10-75	10-105	11-154

\*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Environmental Analysis Request/Chain of Custody



Lancaster Laboratories  
Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 16657 Group # 1629450 Sample # 8233404-09

COC # 397218

Client Information				Matrix		Analysis Requested										For Lab Use Only		
Client: <u>Stantec</u>		Acct. #:		Sediment <input type="checkbox"/>	Ground <input checked="" type="checkbox"/>	Surface <input type="checkbox"/>	Preservation Codes										FSC: _____	
Project Name/#: <u>MHICRCRA (1st Quarter)</u>		PWSID #:					H	O	N	B/O	H							SCR#: _____
Project Manager: <u>Jennifer Menges</u>		P.O. #:		Potable <input type="checkbox"/>	NPDES <input type="checkbox"/>	Other: _____	Total # of Containers	EPA 624 Water	EPA 625 Water Extraction	Metals by SW846-6010B	Total Cyanides (TCN)	SGT-HEM (GPA)	Preservation Codes				Remarks	
Sampler: <u>Colin Dobinski</u>		Quote #:											H=HCl	T=Thiosulfate	N=HNO <sub>3</sub>	B=NaOH		S=H <sub>2</sub> SO <sub>4</sub>
State where samples were collected: <u>PA</u>		For Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>		Soil <input type="checkbox"/>	Water	Other:												
Sample Identification		Collected															Grab	Composite
Date	Time																	
MW-86	2/4/16	1020	X		X		1	X	X	X	X	X					EPA 624: Benzene, Toluene,	
MW-17		1120	X		X		9	X	X	X	X	X					Ethylbenzene, Total Xylenes	
MW-28		1415	X		X		9	X	X	X	X	X					EPA 625: Acenaphthene,	
MW-30		1230	X		X		9	X	X	X	X	X					Anthracene, Benzo(a)anthracene	
MW-40		1540	X		X		9	X	X	X	X	X					Benzo(a)pyrene	
TB-20160204	-	-					2	X									Bis(2-ethylhexyl)phthalate	
																	Chrysene, Di-n-butyl phthalate,	
																	Fluorene, Naphthalene,	
																	Phenanthrene, Phenol,	
																	Metals: Chromium, Lead	

  

<b>Turnaround Time (TAT) Requested</b> (please circle) Standard <u>Standard</u> Rush (Rush TAT is subject to laboratory approval and surcharge.)		Relinquished by <u>[Signature]</u> Date <u>2/5/16</u> Time <u>1100</u>		Received by <u>[Signature]</u> Date <u>2/5/16</u> Time <u>1100</u>	
		Relinquished by <u>[Signature]</u> Date <u>2/5/16</u> Time <u>1130</u>		Received by <u>[Signature]</u> Date <u>2-5-16</u> Time <u>1130</u>	
		Relinquished by <u>[Signature]</u> Date <u>2-5-16</u> Time <u>1533</u>		Received by <u>[Signature]</u> Date _____ Time _____	
		Relinquished by _____ Date _____ Time _____		Received by _____ Date _____ Time _____	
		Relinquished by _____ Date _____ Time _____		Received by <u>[Signature]</u> Date <u>2/5/16</u> Time <u>1533</u>	
Date results are needed: _____ E-mail address: <u>jennifer.menges@stantec.com</u>		EDD Required? <u>Yes</u> No If yes, format: <u>EQUIS</u>		Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____	
<b>Data Package Options</b> (circle if required) Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only) Type III (Reduced non-CLP) TX TRRP-13 NYSDEC Category A or B MA MCP CT RCP		Site-Specific QC (MS/MSD/Dup)? Yes No (If yes, indicate QC sample and submit triplicate sample volume.)		Temperature upon receipt <u>0.3-0.8</u> °C	

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0615

Sample Administration  
Receipt Documentation Log

Doc Log ID: 135513

Group Number(s): 1629450

Client: Stantec**Delivery and Receipt Information**

Delivery Method:	<u>ELLE Courier</u>	Arrival Timestamp:	<u>02/05/2016 15:33</u>
Number of Packages:	<u>4</u>	Number of Projects:	<u>3</u>
State/Province of Origin:	<u>PA</u>		

**Arrival Condition Summary**

Shipping Container Sealed:	No	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	VOA Vial Headspace $\geq$ 6mm:	No
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	2
Samples Intact:	Yes	Trip Blank Type:	HCl
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Patrick Engle (3472) at 16:04 on 02/05/2016***Samples Chilled Details***Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.*

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT121	0.8	DT	Wet	Y	Loose/Bag	N
2	DT121	0.5	DT	Wet	Y	Loose/Bag	N
3	DT121	0.5	DT	Wet	Y	Bagged	N
4	DT121	0.3	DT	Wet	Y	Bagged	N

# Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

<b>RL</b>	Reporting Limit	<b>BMQL</b>	Below Minimum Quantitation Level
<b>N.D.</b>	none detected	<b>MPN</b>	Most Probable Number
<b>TNTC</b>	Too Numerous To Count	<b>CP Units</b>	cobalt-chloroplatinate units
<b>IU</b>	International Units	<b>NTU</b>	nephelometric turbidity units
<b>umhos/cm</b>	micromhos/cm	<b>ng</b>	nanogram(s)
<b>C</b>	degrees Celsius	<b>F</b>	degrees Fahrenheit
<b>meq</b>	milliequivalents	<b>lb.</b>	pound(s)
<b>g</b>	gram(s)	<b>kg</b>	kilogram(s)
<b>µg</b>	microgram(s)	<b>mg</b>	milligram(s)
<b>mL</b>	milliliter(s)	<b>L</b>	liter(s)
<b>m3</b>	cubic meter(s)	<b>µL</b>	microliter(s)
		<b>pg/L</b>	picogram/liter
<b>&lt;</b>	less than		
<b>&gt;</b>	greater than		
<b>ppm</b>	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

## Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value  $\geq$  the Method Detection Limit (MDL or DL) and  $<$  the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column  $>40\%$ . The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column  $>100\%$ . The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

**Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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